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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,404	02/11/2002	Feng-Tso Chien	25740-02A	3989

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EXAMINER

MANDALA, VICTOR A

ART UNIT PAPER NUMBER

2826

DATE MAILED: 02/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/073,404

Applicant(s)

CHIEN, FENG-TSO

Examiner

Victor A Mandala Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### Response to Election/Restriction

1. Applicant's election without traverse of the device, Group I claims 1 & 3 in Paper No. 6, filed on 1-21-03, is acknowledged.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 & 3 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,097,302 Fujihira et al.

2. Referring to claim 1, a power MOSFET device with reduced snap-back and being capable of increasing avalanche-breakdown current endurance, which is sequentially a drain with N<sup>+</sup> silicon substrate, (Figure 1 #2), an N<sup>-</sup> epitaxial layer, (Figure 1 #3), formed on said N<sup>+</sup> silicon substrate, (Figure 1 #2), a source contact region formed of a N<sup>+</sup> doped well, (Figure 1 #9), and P<sup>+</sup> doped well, (Figure 1 #4), implanted after etching in a P<sup>-</sup> well, (Figure 1 #8), formed on said N<sup>-</sup> epitaxial layer, (Figure 1 #3), and a gate electrode, (Figure 1 #7), with deposition of polysilicon, (Col. 3 Lines 2-4), above a channel region between said N<sup>-</sup> epitaxial layer, (Figure 1 #3), and N<sup>+</sup> source contact region, (Figure 1 #9), said device is characterized in that: Said source contact

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region, (Figure 1 #9), is formed by etching into said P<sup>-</sup> well, (Figure 1 #8), first and implanting P<sup>+</sup> dopant, (Figure 1 #4), to the interface between said N<sup>-</sup> epitaxial layer, (Figure 1 #3), and P<sup>-</sup> well, (Figure 1 #8), and the source contact region of said N<sup>+</sup> well, (Figure 1 #9), and that of said P<sup>+</sup> well, (Figure 1 #4), are not at the same level, by which it is possible to increase the avalanche breakdown current durable capability of the power MOSFET device.

Initially, and with respect to claim 1, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hira, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

As to the grounds of rejection under section 103, see MPEP § 2113

2. Referring to claim 3, a power MOSFET device comprising: an N<sup>+</sup> silicon substrate, (Figure 1 #2); a gate electrode, (Figure 1 #7); an N<sup>-</sup> epitaxial layer, (Figure 1 #3), formed above said N<sup>+</sup> silicon substrate, (Figure 1 #2), at least a portion of which is intermediate the N<sup>+</sup> silicon substrate, (Figure 1 #2), and the gate electrode; a P<sup>-</sup> well, (Figure 1 #8), implanted in the N<sup>+</sup> well, (Figure 1 #9), implanted in the N<sup>-</sup> epitaxial layer, (Figure 1 #3); a source contact region, (Figure 1 #9), etched into the P<sup>-</sup> well, and formed of an N<sup>+</sup> doped well, (Figure 1 #9), and a P<sup>+</sup> well, (Figure 1 #4), wherein the P<sup>+</sup> doped well, (Figure 1 #4), interfaces the N<sup>-</sup> epitaxial layer, (Figure 1 #3), and the P<sup>-</sup> well, (Figure 1 #8), and the N<sup>+</sup> doped well, (Figure 1 #9), is spaced apart from and located above the P<sup>+</sup> doped well, (Figure 1 #4); whereby the snap back is reduced and the avalanche breakdown current endurance is increased.

Initially, and with respect to claim 3, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hira, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

As to the grounds of rejection under section 103, see MPEP § 2113

### *Conclusion*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor A Mandala Jr. whose telephone number is (703) 308-6560.

The examiner can normally be reached on Monday through Thursday from 8am till 6pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

VAMJ  
February 5, 2003

  
SUPERVISOR, PATENT EXAMINER  
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